DOCUMENT RESUME

ED 371 946 SE 054 608

AUTHOR	Braus, Judy A.; Monroe, Martha C.
TITLE	Designing Effective Workshops. Workshop Resource Manual.
INSTITUTION	Michigan Univ., Ann Arbor. School of Natural Resources.
SPONS AGENCY	Environmental Protection Agency, Washington, D. C.
REPORT NO	ISBN-1-884782-02-7
PUB DATE	94
CONTRACT	EPA-G-NT901935-01-0
NOTE	43p.; For other booklets in the series, see SE 054 607-611.
AVAILABLE FROM	National Consortium for Environmental Education and Training, Dana Building, 430 E. University Ave., Ann Arbor, MI 48109-1115.
PUB TYPE	Guides - Classroom Use - Teaching Guides (For Teacher) (052) -- Books (010)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Curriculum Development; Elementary Secondary Education; *Environmental Education; Inservice Teacher Education; *Program Development; *Teacher Education Programs; *Teacher Workshops; Teaching Guides; Units of Study; *Workshops
IDENTIFIERS	*Environmental Education Programs

ABSTRACT

This booklet is one in a series of resource manuals to help teacher educators conduct environmental education (EE) teacher workshops or promote EE programs. This unit offers background information and strategies for designing and leading teacher education workshops and programs and benefits those unfamiliar with adult education methods and workshop design. An introduction provides six training tips on which the unit is based: building support by the teachers; knowing the audience; engaging the participants; setting the right tone; evaluating and revising previous workshops; and being prepared. The unit is presented in eight sections that describe: (1) methods of building support; (2) seven steps to design an experiential workshop; (3) selecting an appropriate strategy from among lectures, small groups, role plays, case studies, field trips, and educational media; (4) four key facilitation skills; (5) planning for ongoing support; (6) evaluating the program; (7) a checklist for the perfect workshop; and (8) a list of 17 resources from books and articles. (MDH)

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ED 371 946

IT ToolBox
Workshop Resource Manual

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Designing Effective Workshops

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The Environmental Education Toolbox

EE Toolbox—
Workshop Resource Manual

Designing Effective Workshops

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This project has been funded by the United States Environmental Protection Agency under assistance agreement number EPA-G-NT901935-01-0 to the University of Michigan School of Natural Resources and Environment.

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ISBN 1-884782-02-7

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Printed on paper containing 50% total recycled fiber/25% post-consumer fiber using soy based ink.

Designed by Margaret Re
Typeset in Sabon,
News Gothic, and Franklin
Gothic Number 2

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Introduction

THE ROOM IS JUST ABOUT READY. The chairs are arranged just the way you want them. A giant groundwater map is tacked up in the back, and posters of everything from parrots to pollution hot spots decorate the walls. A stack of transparencies sits next to the overhead projector, and two flip charts, stocked with fresh pads of recycled paper, stand side by side in the front. Handouts, markers, extra masking tape, and activity props sit on a side table.

As the smell of freshly brewed coffee drifts to the front of the room, you suddenly begin to panic. In ten minutes you will be in front of a group of teachers you have never met, trying to get them excited about environmental education (EE). What if you can't get them to interact? What if they're bored? What if . . . ?

This unit is all about designing and implementing a successful EE workshop and helping you prepare for the "what ifs" of training. It includes sections that focus on how to conduct a needs assessment, find institutional support, design a workshop, build support for teachers into your program, improve facilitation skills, and measure success. The resource section includes a workshop checklist that you can adapt to fit your needs and a resource list that builds on information presented here.

The information presented in this unit is based on the following training tips. By keeping these six tips in mind, you can design and implement successful programs for any situations.

Build Support

Without buy-in from colleagues, administrators, financial supporters, and other key players, your workshop program will not be as successful as it otherwise could. Making sure your ideas will enhance and complement the mission of the institution is an important first step. It is also critical to involve key players in planning, implementing, and evaluating your workshop. (See page 3 for more about building support.)

Know Your Audience

You might think you know how your target audience will feel about taking part in a workshop you are designing, but you really won't know until you ask. Conducting a needs assessment before a workshop will help you develop a more effective and successful program. Make sure to ask participants about their expectations, needs, and interests as well as prior knowledge and skills on the topics you hope to cover. Then use the information to develop your workshop goals and objectives. (See page 5 for a sample needs assessment and pages 7–13 for more about designing workshops.)

Engage the Participants

Although there are many ways to design effective workshops, the best ones engage the participants in thought-provoking activities and discussions directly relevant to their lives. It doesn't take long for participants to tune you out if they can't make the connection between the workshop and their own experiences. We recommend that you incorporate the experiential learning cycle into all your workshop sessions to ensure high interest, relevance, and engagement. We also suggest that you model effective adult education strategies that involve participants and show them how they can use the same techniques in their own classes. (See Sections II and III in this unit to help you design experiential workshops and select appropriate training strategies.)

Set the Right Tone

When a group of educators files into a room to take part in a workshop or training session, each participant brings certain expectations, fears, and experiences. As a teacher educator, you need to build on their knowledge and background to create a welcoming climate. It's also important to remember that all of us have specific learning styles along with a desire to take part in activities that will generate positive feedback and peer respect. Good workshop design and engaging activities are only part of the formula for a successful workshop. The rest is you. By honing your facilitation skills and paying attention to how adults learn best (see box on page 7), you can build an atmosphere of trust and help your participants get the most out of the experience. (See Section IV for more about facilitation skills.) You can also design opportunities for ongoing support into your workshop activities and assignments (see Section V).

Evaluate and Revise

Before you start each workshop, always think about how you will evaluate it. Then use the evaluation to revise and improve your workshop. There are many ways to conduct workshop evaluations, from paper and pencil evaluations to small group discussions. Use whatever works best, but make sure to do something. (See Section VI for more about workshop evaluation.)

Be Prepared

This might sound easy, but it's not. Designing and implementing a workshop takes a lot of thinking and a lot of work. After you have decided what to do, make sure that everything—from handouts to equipment—is ready so the workshop runs smoothly and learning can occur. Participants should have clear expectations for your workshop and how it fits into larger EE efforts. (See Section VII for a checklist that reviews the most important steps in planning, conducting, and implementing a workshop.)

Building Support

I

SO YOU WANT TO DESIGN AN EE WORKSHOP. What's the first step? You will need to ask a lot of people a lot of questions. One set of questions should be directed to people with whom you will work: coordinators, supervisors, directors, and managers of the school or institution. Another set should be directed to the people who will attend your workshop. This section suggests ways of thinking about both audiences so you can design a program with input from the top down and the bottom up.

Identify Key Players

Before you begin to draft your workshop design, it's important to garner support from the key players. In some cases, the support is a given. For example, if you are asked to conduct an EE workshop for a school district as part of a larger EE program, you won't need to "sell" people on the value of EE. But you would still need to talk to the lead administrator, the staff development coordinator, and the educators who will participate.

Whether you are offering a workshop modeled on a national program (such as Projects WILD or WET) or if you are originating the workshop concept ("Six Ways to Use the Main Street Cemetery in Mathematics"), you still need to identify the key players and develop a base of support. This is often a function of asking the right questions and winning the trust of key individuals. You might think about who has power in your local education system or state, and what influences the system. Curriculum coordinators often promote specific staff development programs—is this true in your area?[1] Who needs to approve the workshop? Who might gain if the workshop is a tremendous success? Think about who needs to be informed of the workshop, what type of support or commitment you need from each person, how much each person wants to be involved, and how you can build support if it is lacking.

Analyze your "support base"—the funding, personnel, or resource materials you receive from your partners and co-sponsors. The type, amount, and flexibility of the support base could have a significant impact on the credibility and ultimate success of your program. The demands of your backers may constrain your program, affecting, for instance, your ability to offer graduate credit, your decisions about whether to charge for workshop materials, and your freedom to discuss controversial issues such as population growth. Of course, if you decide to go with fewer financial backers, you may end up with another problem: higher workshop fees, which limit the number of people who can afford to attend.

The range of institutional support sources is quite broad, including for-profit, non-profit, private, and governmental agencies that operate in the local, state, national, and international arenas. Whether you are looking for resources and support from the EPA, a school system, a nature center, a university, or the National Science Foundation, an evaluation of this support base is important. The next page offers some general points to consider.

By using these questions as a general guide, you can increase your chances of running a successful program. To better understand the type of support base you need or want, add more detailed questions. If you run into problems, you can work on finding an alternate support base or establishing a partnership or consortium of providers—these can balance each other out so that a problem with one source becomes less significant overall.

Questions for Assessing Your Support Base [2]

- Is the support institution in philosophical agreement with you? Some environmentalists are not willing to take money from certain industries. For instance, a strong preservationist may have difficulty working with an institution that promotes consumptive use.
- Are the goals and objectives of the program clearly delineated, understood, and agreed upon by all parties?
- What resources will the institution contribute to the program? Most take the form of funds, personnel, materials, or facilities.
- What resources will the institution supply as incentives for teacher participation? Options include stipends, university credit, and free materials.
- Are all the materials relevant, of high quality, and appropriate for your audience?
- What timeline does the arrangement have? When will a review or change take place?
- Is it clear who maintains ownership of products produced during the program?
- What record-keeping is expected of the teacher educator?
- Does everyone understand and agree on how the program will be evaluated?

Know Your Audience

Conducting a needs assessment before the workshop will help you match your efforts to the needs and interests of the participants. You can get useful information through written surveys, participant interviews, or a few questions on the registration form. You should consider contacting as many participants as you can as well as administrators, supervisors, and others who might have ideas about what the workshop should include.

Needs assessments are not only used for designing workshops but are also useful in refining the agenda once you have registered participants. In either case, your efforts to understand the participants' interests, needs, and experiences will help you design the most useful program. A needs assessment is a chance to explain some of your expectations to participants and elicit their ideas, setting the stage for a good workshop experience. Most teachers will be delighted that you asked for their input.

Realistically, you can't always sample everyone who will attend. However, it's important to get a representative sample and include participants who are new to the topic. Particularly as EE programs offer more services in urban areas and to new populations, some of the assumptions that are built into materials or workshop designs may not be appropriate. To make sure you hear from everyone, you might need to follow up with certain participants or send reminders to encourage them to complete questionnaires.

The chart on the opposite page provides some ideas of questions that can help you better understand your participants. Questions like these can be used in surveys, questionnaires, group discussions, interviews, or casual conversations. If you have a small group, you can also add some open-ended questions to your survey that ask participants to list priorities or needs. For example, you might ask them to list the three things they would most like to get out of your workshop.

Use the results of the needs assessment to develop the goals and objectives for your workshop (see page 11 for tips on writing objectives).

Sample Needs Assessment Questions

To know more about a group of teachers . . .

In total, how many years have you been teaching?

To know more about what the participants think about your topic . . .

I feel comfortable teaching about hazardous wastes and related issues.

_ *strongly agree* _ *agree* _ *not sure* _ *disagree* _ *strongly disagree*

A need exists for teacher workshops that provide educators with the knowledge and skills about what biodiversity is and why it is important.

_ *strongly agree* _ *agree* _ *not sure* _ *disagree* _ *strongly disagree*

To get a sense of their teaching style . . .

How helpful would you find the following resources for enhancing your efforts to teach about biodiversity? *(1 = not helpful, 5 = very helpful)*

printed background information	1 2 3 4 5
articles for students	1 2 3 4 5
video or videodisk	1 2 3 4 5
instructional activities	1 2 3 4 5
posters	1 2 3 4 5
guest speakers	1 2 3 4 5
CD-ROM	1 2 3 4 5

How often do you engage your students in the following learning methods? *(1 = rarely, 2 = monthly, 3 = weekly, 4 = frequently)*

field trips	1 2 3 4
hands-on activities	1 2 3 4
homework	1 2 3 4
creative writing	1 2 3 4

To understand teachers' perceptions of their constraints . . .

Is there anything that prevents you from teaching more about biodiversity? If so, what would be the main barrier?

a. I don't understand the issues well enough.
b. I lack materials.
c. It doesn't fit in my curriculum.
d. I feel uncomfortable with controversial issues.
e. other: _____

To assess teachers' workshop preferences . . .

How interested are you in the following activities for an after-school inservice program? *(1 = not interested, 5 = very interested)*

video and discussion	1 2 3 4 5
small group activity	1 2 3 4 5
speaker and discussion	1 2 3 4 5

Guess Who's Coming: A Needs Assessment Offers the Answer

"You're increasing the registration maximum to a hundred participants?" Neither the miles nor the tenuous conference call connection could mask Charlie's surprise. "And this workshop is supposed to model effective, interactive training sessions?"

"That's exactly why we need to conduct a needs assessment," stated Tracy emphatically. "We can't alter the agenda to meet their needs after the first session. I'm not even sure we can ask them to choose the issue they want to work on. It will be important for us to know who's coming and what their interests and needs are."

"Tracy's right," agreed Kate. "Our office can handle the paperwork, although it will be a struggle to get something out on time. But this is clearly the *right* thing to do."

Charlie, Tracy, and Kate were organizing a two-day workshop for the annual North American Association for Environmental Education conference in Montana. Because early registration was so heavy, NAAEE asked if the number of workshop participants could increase from 35 to 100. Most of the participants signed up after reading a brief description which, unfortunately, was general enough to attract a variety of interests and expectations. And the registration form did not ask about experience or job title.

Tracy had originally argued for letting participants choose as many sessions and topics as possible during the workshop. But, with 100 people, offering choices could produce chaos. She figured the agenda needed to contain sessions that most people wanted. And, as organizers, she and Kate and Charlie couldn't know those desires without a needs assessment. So, during the conference call, Tracy made her pitch for surveying registrants with a list of choices before the workshop.

Kate developed a short survey asking registrants to indicate their interest in potential session choices. It also included questions about their experiences and how the workshop could be helpful to their work.

Kate knew that the longer she waited to mail the needs assessment, the more people would have registered, but the less time she, Tracy, and Charlie would have to rebuild the agenda. Resigned to the fact that some things would have to happen at the last minute, Kate decided to mail the surveys three weeks before the workshop: a week to get to the participants, a week to get back, and a week for her to total the numbers and make sense of the requests. She printed a bold plea for a fast turn-around at the top of the explanatory letters and included her fax number.

One week before the conference, the organizers knew that 60 of the 85 pre-registered participants worked directly with teachers and managed small, autonomous programs. Many worked for government agencies and non-profit organizations; most had at least five years of workshop experience and would bring many ideas to share about teacher training. Kate, Tracy, and Charlie used the participants' input to create new sessions and modify activities.

When the workshop began, the organizers used the information from the needs assessment to tell the participants a little about themselves as a group and highlight the ways the agenda was designed specifically for them. In the end, part of the workshop's success was due to the fact that Charlie, Kate, and Tracy asked for key information and used it to tailor the workshop around the participants' needs. In a word, they listened.

Designing an Experiential Workshop

II

THERE ARE DOZENS of ways to design an effective workshop or in-service program. How you decide to do it depends on your personal style as a facilitator, the needs of your participants, the amount of time you have to prepare, and many other factors. Some workshops are very instructor-centered, where the facilitator controls most of the learning that takes place. Other workshops are much more learner-centered, where the participants share the responsibility for their learning with workshop facilitators. And many workshops fall in between, with a mix of activities that may be dominated by the instructor or by participants.

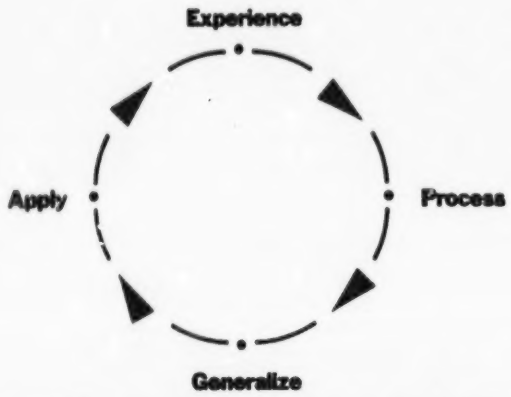
In this section, we emphasize an experiential approach to training. This approach has participants take part in a variety of experiences, then analyze and discuss them. Using insights gained from the analysis, they apply what they learn to their own teaching situations. This workshop model is based on certain assumptions about how adults learn best. These assumptions include a need to build on participants' experience and expectations and to create an atmosphere of trust that helps bring out their best. Although there are many similarities between adult and student learners, adults walk into your workshop with more life experiences and, often, greater expectations.

Traits of Learners and Consequences for Workshop Design

Learners in general:
- expect to be treated with respect and recognition,
- need the support of their peers in their learning,
- have different learning styles that reflect their experiences and personalities,
- want practical solutions to real-life problems,
- can reflect on and analyze their own experiences,
- can be motivated by the possibility of fulfilling their personal needs and aspirations,
- need to communicate their feelings in culturally appropriate ways, and
- are capable of making their own decisions and taking charge of their own development.

Therefore, your workshops ought to:
- focus on issues that participants care about and that connect to their workplaces,
- involve them in discussing ideas and sharing experiences, and
- provide choice and flexibility in the schedule and activities.

An Experiential Learning Model
Research shows that people of all ages learn best by taking part in activities that build on what they already know. The experiential learning model below is based on this research and encourages participants to "learn by doing."



You can use this model to develop a two-hour session or a week-long course. For example, you might conduct several experiences before processing, generalizing, and applying. The important thing to remember is that each session should involve an interactive experience that engages the participants, followed by time to process the experience, generalize about what took place, and apply what was learned.

Although there are many training models to help you design an effective workshop, we recommend those that emphasize learner-centered training. In this section, we are using an experiential model developed by the Training Resources Group, Inc.[3] This model, which is explained in the accompanying box, is the foundation of the Seven-Step Session Design that follows.

The Seven-Step Session Design

When designing a workshop, we recommend that you build on the basic experiential learning model by adding elements that help participants understand what will happen and how it applies to their work. In the following seven-step design, you'll see that the experiential learning model makes up the core. In some cases, if you are conducting a very short program, your workshop will be one long session and will use each of these seven components once. In other workshops, you will be conducting many sessions within a workshop, and this model will repeat several times throughout the workshop.

Here's a general overview of how a workshop or workshop session should flow. An example of a session with each of these components follows.

1 Set the Climate

Open the workshop with something that motivates participants and gets them excited about the topic. The opening can also provide a rationale for why the subject is important to participants and how it will be useful to them. This is the time to make introductions, conduct a relevant ice-breaker, read a motivational quotation or story, or use a special demonstration or gimmick to get the attention of the participants and draw them into the workshop. If this is not the first session,

you can use part of this time to describe how the new session fits into the overall framework of the workshop. After that, you might want to ask a question or two to help participants focus on the topic of the new session.

Room arrangement is more important than you might think. You need to set up your workshop space to facilitate learning and interaction. If you have designed small group activities throughout the workshop, you might want four or five participants seated at each table, which is angled so everyone can easily see the front of the room. If you have a large group and don't plan to use smaller discussion sessions, try arranging the chairs in semicircular rows, with a middle aisle and space on all sides. Posters, maps, and other visual aids can help enliven the room. Your goal is to create an environment where everyone feels comfortable, where you can walk around and interact with participants, and where everyone can see everyone else.

2 Review Goals and Objectives

Before a workshop begins, it's important for you to present the purpose of the training activity to the participants. Make sure workshop goals and objectives are written clearly on a flip chart or overhead so that all participants can see them. Clearly state what information and skills you want the participants to gain by the end of the workshop as well. (See page 11 for more about writing goals and objectives.) This is also the time to discuss how you used information from the needs assessment to develop the workshop goals and objectives and to design the workshop. You might want to build some options into the agenda so that participants can help design their own schedule based on the needs they wish to fulfill.

Make sure to give the participants an opportunity to ask questions about the goals or objectives, add ideas, or raise concerns. You can also conduct an expectations activity: Ask participants to list their expectations on a flip chart and then explain how most will be met during the course of the workshop. Post their expectations and refer to them at the end of the workshop.

3 Conduct the Activity

This is the core of the workshop. Participants engage in an activity that provides them with an opportunity to "experience" a situation relevant to the goals of the training sessions. In turn, this "experience" becomes the data-producing event that participants analyze as they complete the learning cycle. Common experiences involve role plays, case studies and small group activities. They can also include practicing new skills and taking field trips. (See Section III for more about types of activity approaches; see other *Workshop Resource Manual* units for activity suggestions).

4 Process the Experience

After participants take part in an activity, allow them to share their individual reactions. This will help them begin the process of analyzing and understanding the experience. As facilitator, it is your role to guide this process. It is important to choose processing questions related to the group task—you should only need three or four. Typical processing questions include: "What happened in this experience?" "What did you find difficult about the experience?" "What worked well?" "What would you change?"

5 Generalize

Although this step is often left out of the cycle, it's one of the most important parts of a workshop session. By trying to identify key generalizations about the experience, participants can see how the activity relates to themselves. Questions such as "What insights did you get from this experience?" or "What was the most important lesson from the session and why?" can help participants begin to think about how the experience relates to their everyday lives. When generalizing, participants can learn by listening to others and may even change their attitudes. While processing questions relate directly to the content of the activity, generalizing questions nudge the participants to broader levels of analysis: instead of reviewing and commenting on specifics, they might address an overall perspective, insight, or attitude.

6 Apply
Using the insights and conclusions gained from the previous steps, the participants identify and share how they plan to incorporate these new insights into their lives. This is a critical step in adult education programs because it gives participants the time needed to incorporate the new information into their context in meaningful ways. Questions such as "Now what?" and "How can I use what I learned?" can help participants begin the application process.

7 Reach Closure
Although some people end workshops with the application step, we recommend that you close by briefly summarizing these events and making links to the goals and original expectations. It's important for participants to feel that you accomplished what you set out to do, that their expectations were met, and that there is closure. You can also use this step to close one session and make a link to the next one.

Using the Seven-Step Model

To give you a better idea of how the seven-step model works, here's a example. It outlines a two-hour session near the end of a three-day EE workshop for elementary teachers. This session focuses on helping teachers generate ideas for overcoming barriers to implementing EE in their schools.

1

Setting the Climate and Introducing the Session

"We've discussed and experienced a lot of different ideas for integrating EE into your school curriculum over these three days. You probably have some good tips and can also see some barriers to implementing EE. In this activity, I'd like you to work in small groups to think about solutions to these challenges."

2

Explaining the Objectives for the Session

"In this session, you have two main objectives:

–to list several important barriers to integrating EE into your school, and

–to describe several strategies for overcoming each barrier."

3

Conducting the Experience

Put the participants in small groups, distribute paper and pencils, and refer to the tasks outlined on newsprint or the chalkboard.

"In your groups, brainstorm a list of barriers that inhibit your ability to integrate EE into your school. After five minutes, prioritize these barriers and write the main three challenges on a separate piece of paper."

When participants have completed this task, collect their lists and distribute them to different groups. Give the groups a new task:

"In your groups, brainstorm and discuss solutions to each of these barriers. Be creative. Be prepared to report your solutions to the entire group in 15 minutes."

4

Processing the Experience

Ask each group to present its list of barriers and describe its solutions. Open a general discussion and ask for additional solutions that might help teachers in each case:

"In your groups, where did there seem to be the most agreement? Disagreement? Which were the most creative ideas and why?"

5

Generalizing to Broader Themes

After all the groups have reported, ask:

"What insights about solving challenges to EE did this exercise give you?"

"What state of mind would be most productive for you to have if you were to tackle any of these barriers?"

Writing Goals and Objectives

Developing clear goals and objectives is the first step in designing a successful workshop. You need to know what you hope to accomplish in the workshop and be able to convey this to the participants. We suggest you have one or two major goals that frame the workshop plus several measurable objectives that clearly outline what will be accomplished. We also suggest that each session have one or two measurable objectives so that if all the participants master the session objectives, they can also fulfill the overall workshop goals and objectives.

Workshop Goals
The goals should describe in very broad, general terms what you hope the workshop will accomplish. Here are sample goals for an introductory EE workshop for teachers:

- *to increase the number of teachers using EE materials in the Springdale School District; and,*
- *to increase the number of Springdale English teachers using environmental literature in class.*

Workshop and Session Objectives
Objectives should explain specifically what participants will be able to do by the end of the workshop. For longer workshops, we suggest that you also write one or two objectives for each session. Your objectives will help you design the overall workshop and measure your success.

Ask yourself the following questions to ensure that your objectives are appropriate:

- Are they realistic, attainable by the end of the session?
- Do they describe what the participants will be able to do by the end of the session?
- Does each objective include an action verb that can be measured?
- Is each objective as specific and clear as possible?

You'll find that most of your objectives will stress information or skills. For example, objectives that start with the words "list," "describe," or "explain" usually allow participants to simply note information they have absorbed during the session. Objectives that focus more on skills start with verbs such as "demonstrate," "draw," "practice," or "illustrate." Attitudinal objectives are harder to incorporate into a workshop but could use verbs like "express," "evaluate," or "clarify."

Here are two examples of workshop objectives:

- *By the end of the workshop, participants will be able to design an experiential EE workshop for their school; and,*
- *By the end of the workshop, participants will be able to demonstrate a method for infusing EE into their science curriculum.*

6

Applying the Theme to Their World

Then ask participants to connect this exercise with their experience.

"Name one barrier you are likely to face when you integrate EE into your classroom or expand your EE program to other teachers. Write down several solutions you might try to overcome this barrier."

7

Closing the Session

Wrap up the exercise and move on to the next:

"You have all generated some very creative and workable solutions to these common challenges to EE. If you ever run into these barriers, I hope you remember these suggestions and recall the 'can-do' attitude you've all expressed here today."

Scheduling a Workshop

These seven steps can be used to build a session, a weekend program, or a semester course. They can help you think about how to create a learning environment. But there are other aspects of the workshop that need to be factored into your plans when you sit down to create the agenda. Here are some additional suggestions for designing the overall workshop schedule.

Framing the Day
If you are designing a one-day workshop, start with the opening and closing times and set aside at least 45 minutes for lunch; if people need to go out for lunch, or if you need to set up and clear away food, lengthen the lunch period. Starting times should accomodate distances that participants will be driving as well as their typical work day routine. If you are asking people to give up a free day, you might want to consider something shorter than an eight-hour day. Once the day is framed, schedule several breaks.

Breaks
Adults generally have a hard time sitting for more than two consecutive hours, so it's important to have one 15–20 minute break in each of the morning and afternoon sessions. Besides allowing participants to get coffee and visit the restroom, these non-teaching times are opportunities for participants to meet each other, exchange ideas, and take a mental break. Breaks can also be used as "assignments"—for instance, you can encourage to take a walk outdoors and contemplate a question.

Time Blocks
Your schedule should consist of three or four blocks of teaching time. You can build the day much like the seven-step outline, from an introduction to the topic (perhaps a speaker, story, lecture, or demonstration) to the application stage. Participants are more likely to be drowsy after lunch, so make sure the early afternoon block is engaging. Either within or across the blocks, use a variety of methods that engage learners to keep the day moving. Section III offers some pointers for good education strategies.

Short Workshops: Less Than One Day
Shorter workshops can present a time challenge, so make sure your objectives are very focused and reasonable. You may be limited to just providing some new information and facilitating a very short discussion of how it might be used in various grade levels. Don't make the common mistake of trying to cover too much material.

Longer Workshops: More Than One Day
A program that lasts more than one day offers additional opportunities for reflection, practice, and projects. If teachers return after a week in the classroom, build that time into an assignment and then ask them to share results. If participants are with you overnight, they might design and organize projects, units, or programs of their own. It is very important to build in opportunities for them to practice new skills and get feedback from peers.

Sample Agenda for a Two-Day Workshop

This workshop introduces middle school teachers to an innovative EE curriculum package, California's CLASS Project. The agenda uses lessons from the material to reinforce good teaching methods and gives participants time to become familiar with the CLASS Project. Each of these sessions contains the seven steps (experience, process, etc.) discussed on pages 8–10. An assignment between the first and second day is used to structure an opportunity for teachers to consider how they can use the materials. Small group discussions are balanced with short lectures to keep participants involved.

Day 1

8:30 a.m.	Welcome and introductions
8:50	Ice-breaker: "Take a Closer Look"
9:10	Housekeeping announcements
9:15	Goals and objectives of the workshop, expectations of participants
9:30	History and Overview of the CLASS Project
9:45	Session 1: "Going . . . Going . . . Going" *Break into small groups and complete energy efficiency activity.*
10:45	Break
11:00	Session 1 (continued): "Connections to Thinking Skills" *Mini-lecture on thinking skills, processing of energy activity, and small group activity to improve questioning skills.*
noon	Lunch
1:00 p.m.	Session 2: "Using Topographic Maps" *Individuals and groups work on map skills and spatial relationships.*
2:00	Break
2:15	Session 2 (continued): "Making Groups Work" *Mini-lecture and exercise on cooperative learning.*
3:15	Session 3: "Understanding CLASS Project Materials" *Walk through the Manual and answer questions.*
4:00	Homework assignment *Identify two activities that suit your curriculum and class.*
4:15	Brief evaluation and closure

Day 2

8:30 a.m.	Welcome back, review Day 1, answer questions
8:45	Session 4: "Hazardous Waste on the Home Front" *Work in pairs to explore household hazardous wastes.*
9:15	Session 5: "CLASS and Active Learning" *Mini-lecture and discussion with examples from previous activities; introduce next activity with active learning objectives.*
9:45	Break
10:00	Session 6: "Where Have all the Marshes Gone?" *Demonstrate a role play with group participation and active learning.*
11:30	Process role play, summarize active learning
noon	Lunch
1:00 p.m.	Session 7: "Curriculum Connections" *Use the homework assignment to develop links with the state curriculum framework.*
1:45	Session 8: "Not So Gentle Rain" *Demonstrate connections to science, social science, language arts.*
2:30	Break
2:45	Session 8 (continued): "Links to Your Subject Area" *Group discussions on integrating CLASS into specific subject areas.*
3:15	Team planning *Discuss with colleagues how CLASS could be implemented at your school.*
4:00	Final questions and handouts
4:10	Evaluation
4:20	Closure

III

Selecting the Strategy

As a facilitator, you can choose from a variety of teaching methods to accomplish your workshop goals. You can use role plays, surveys, slide shows, lectures, field trips, and many other experiences to help you cover the material and maintain a high level of interest. When choosing a strategy, think about your specific objectives for the session, any constraints that might limit your choices, and the needs and desires of your audience. Also think about your total workshop design and try to use a variety of approaches to hold participants' attention and keep enthusiasm high. Finally, remember that you are modeling good teaching. The methods you use most will likely be the ones your participants will try first.

In this section, we'll look closely at five workshop approaches: lectures, small group activities, role plays, case studies, and field trips. We've also included a list of audio-visual resources you can use to enhance any of these teaching strategies. The example on pages 16 and 17 explains how facilitators can weave several of these strategies into one workshop.

The Lecture Circuit: Using Interactive Lectures

A lecture is a great way to communicate information quickly and efficiently to a large group. Unfortunately, some lectures bomb because the material is unclear, the presenter is boring or unprepared, the talk is too long, there are no audiovisuals, or the conditions do not encourage learning (uncomfortable room temperature, uncomfortable chairs, unreadable overheads). Lectures are also teacher-centered and tend to be the least effective way of preparing participants to actually use the knowledge they gain.

Although we recommend that you don't use lectures exclusively, a short, interactive talk can be a very effective workshop experience. Here are some quick tips for making the most of a lecture.

Start With a "Grabber"

Begin with a provocative question, video clip, brain teaser, demonstration, or some other opener to engage the group. You could present the results of your needs assessment or ask a series of short questions that participants respond to with a show of hands.

Use Visuals

Flip charts, handouts, slides, video clips, and other audio-visual aids can dress up your lecture. Use them throughout your presentation and make sure that what you use is well-designed and effective. It may be good to distribute an outline or brief summary so participants can follow your talk—they won't be bothered with taking notes and can listen more attentively.

Keep It Short and Sweet

Although some people can keep an audience entertained and interested for more than 30 minutes, most of us can't. This is especially true if we don't use engaging visual aids. We recommend that you keep your lectures short (less than 15 minutes) to maintain a high level of interest and keep sessions moving. Remember, you may know more about the subject than your audience, but they probably don't want to know everything you know. Above all, select three to five points that are most important and use your talk to explain and illustrate them.

Make It Interactive
Throughout your presentation, ask the group probing questions and encourage them to be thinking. You can also introduce a few short group activities into your lecture to encourage interaction. Try not to read a prepared "speech" or "paper." If you talk about the subject in your own words and let your natural enthusiasm show through, the audience will be more engaged.

Keep It Lively
Although lectures are a great way to reach a lot of people with information or a particular message, you need to always think about the "entertainment factor." If people are bored by the presentation or delivery, they won't be receptive to the message. Since you can't individualize the learning, do your best to choose words, concepts, and examples that are creative, lively, image-rich, and thought-provoking.

Organize, Organize, Organize
Many speakers ramble, and as a result the important points of their presentations are lost. Make sure to outline your presentation so you are better able to emphasize your main ideas.

Follow With an Activity
After a talk in which information is given to participants, try to plan an activity that allows them to apply what they just learned to their situations. Small group discussions, role plays, or "buzz time" (where teachers simply talk to each other about how to incorporate the material into their curriculum) are a few possibilities.

Divide 'em Up: Using Small Groups

Many facilitators prefer using small group activities over a lecture because this approach allows more people to interact, encourages participants to learn from each other, and shifts the "work" to the participants. Small groups also encourage more participation from people who shy away from speaking out in larger groups. You will also have more time to circulate and hear how each of the groups are progressing.

To make small groups work, you need to plan for them carefully. You need to know how you want the large group divided, what you want the groups to accomplish, how long they have to work together, and how you will have the smaller groups report to the full group. Here are some suggestions for how to make the most of small groups.

Have an End Product in Mind
Make sure you explain what you want each group to produce in the allotted time. For example, you might want the groups to come up with a definition, a list of pros and cons, or a strategy for getting support. Post the chosen task on a flip chart and go over the instructions so all know what to do and how they're supposed to accomplish it.

Specify Time Limits
Give small groups a specific amount of time to complete the task, or series of tasks, and write this on the flip chart. It will help the groups organize their time to effectively accomplish the task. Don't give groups too much time—they'll become bored and distracted.

Get the Numbers Right
You can divide your group into pairs, threesomes, or larger groups. The optimum number depends on the task, number of participants, available space, and amount of much time the group will have to complete the task. The best rule of thumb is to make the groups as small as you can: In general, you'll get the most interaction with groups of five or fewer participants.

Logistics of Choosing Groups
In some cases, you might want to make small group assignments to break the routine or combine people who haven't yet worked together. You can use name-tag codes, counting off, alphabetical ordering, pre-arranged table groups, or picking numbers or colors out of a hat. Usually, you won't want to waste time with complicated directions for getting people in groups. But sometimes—especially in longer workshops—you might want to use a creative technique to divide the group.

Assigning Roles
In some cases, you may want to assign roles to participants to help facilitate small group discussions and reports. For example, you might ask each group to assign a group leader or facilitator (to keep the discussion moving and involve everyone), a group reporter (to present the group's findings or

Picking a Strategy

Steve and Miguel didn't have a lot of time. The workshop was only one month away, and they still needed to figure out what they would be doing in each session.

"At least we finished the goals and objectives," Steve told Miguel as they sat down to work out the details. "It's a good start, and the participants already got it in the mail." Steve's confidence was a reflection of the dozens of EE workshops he had organized for teachers, although this was the first to focus on biodiversity.

"Well, I still think we have a ton of work to do today," mumbled Miguel as he pointed to the huge pile of EE resources spread out on the floor. "You've done this before, but to me it's new. I want to leave today knowing which sessions I'm doing so I can organize slides or flipcharts or whatever I'll need." Miguel was a good enough facilitator to realize what preparation was needed, even though the audience for this workshop—teachers—was different from the adult education courses he had conducted for the Department of Natural Resources.

"OK, let's start with the first day," said Steve. "Leigh Taylor will open the workshop with a few remarks. Then I should probably also give a quick welcome, as the District's EE person."

"Sounds good," agreed Miguel. "How about if I lead the ice-breaker, review the goals and objectives, and ask for their expectations?"

"Perfect," Steve responded. "See, we're already up to 10:00 a.m.! Didn't we think the first session would briefly look at 'excellent' education? That could be a large group discussion." Steve quickly jotted down the ideas, organizing them into the agenda.

"But I thought the second session on 'What is EE?' would be a large group session. That seems like a lot of large group stuff," Miguel observed. "I think we need to give more people time to talk first thing in the day."

ideas to the larger group), a group secretary or recorder (to keep notes on the group discussion or to create flip charts), and a timekeeper (to ensure that the group finishes the task on time). You might also need to assign a person to gather and return any special equipment or props. By modeling this technique, you will reinforce the effectiveness of "cooperative learning."

Monitoring Small Groups

As the participants work, it's important for you to move from group to group and be available for questions from the participants. The groups might need clarification, or they might get side-tracked and need your help to pull them back to the task. Be on the look-out for participants who are either dominating their groups or not taking part. It's also important to periodically let the groups know how much time they have left.

Sample Group Assignments

Wondering what to do in the groups? Most any question that you would ask a large group can be mulled over and answered in small groups. The difference is that you can structure an activity so that all participants interact. Here are some examples.

- ***Think, Pair, Share:*** Give the large group a question and ask each person to think about the answer individually. Next, have the participants discuss the question with a neighbor. Finally, process with the entire group.
- ***Triads:*** Divide into groups of three and give each person one of these roles: interviewer, participant, or observer. The interviewer asks questions, leads the discussion, or practices a skill; the participant responds accordingly; the observer keeps notes on the interaction. You can

"That's true," Steve thought out loud. "Instead of us defining EE for them, they can create their own definitions—a small group task. We can use the suggestions in this book." He picked up the *Workshop Resource Manual*, leafed to the activities in the "Defining Environmental Education" unit, and handed the manual to Miguel.

"This will work," Miguel commented as he skimmed one activity. "After this small group thing, we can take a break and return for the first biodiversity session. But I'm not sure how to handle that. Should we go outside and do an activity, or use a short lecture to give them an overview?"

"It never hurts to go outdoors, unless you need to save the activity for mid-afternoon when folks really need to stretch," Steve said from experience. "Maybe you could start with a short lecture to give an overview of biodiversity and use that video you have to liven it up. Afterward, you could take them outside for an activity."

Miguel and Steve continued to hash out the day's agenda, sharing ideas about how to meet their objectives and vary the strategy. They agreed to lead a model biodiversity activity and then ask small groups to read and critique three or four different activities after lunch, according to criteria they would all develop. The day would end with each group reporting their results on newsprint and a large group discussion on how the teachers could integrate biodiversity into their curriculum.

"Do you think we're trying to cram too much in to the first day?" Miguel asked.

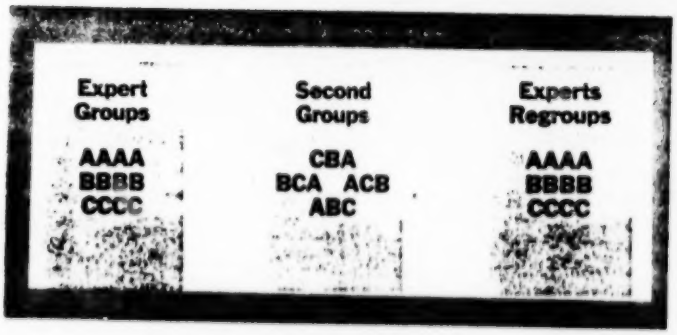
Steve shrugged and said, "Let's leave it for now and come back to it after we see how the other day comes together. At least we've included large and small group work, an outdoor component, and time for them to discuss and reflect on their own teaching . . . Oops, we forgot to leave time for a quick evaluation and wrap-up."

In less than an hour, Steve and Miguel mapped out the first day together and continued on to the remainder of the workshop. Then they decided which of them would lead each session and talked about the resources and equipment they would need. By the end of the day, Miguel was more relaxed about the event and both facilitators looked forward to the workshop.

then have the participants switch roles. It is helpful to have role-definition cards.

- ***Round Robins:*** This reinforces listening skills and helps each person contribute to the task. Give each group a question and ask each person to respond in turn. Explain that as each person answers, he or she must first repeat the key point from the previous person. Don't always start with the same person!
- ***Generating Lists:*** Ask groups to generate lists of such things as criteria, advantages, disadvantages, memories, and similarities. When they report out, ask each group to contribute one item, such as the one considered most important or most innovative.
- ***Field Stations:*** Groups can practice certain skills by rotating through a physical layout of different stations. At each site, group members complete a different task and then move to the next station.
- ***Jigsaws:*** The use of jigsaws is a cooperative learning technique that gives each participant a chance to be an "expert." At first, all participants are grouped by topic. In each group, members develop "expert" knowledge on a topic either by pooling their collective knowledge about it or by processing information provided by you. Then the groups are reorganized so each has one expert from each topic. These groups share information, with every member contributing a different type of expertise. After that, the original expert groups may reconvene if needed.

Here is an example of how to use jigsaws. Divide a group of 12 people into three teams of four. Give each team (A, B, and C) a different task or assign each team new information to collect. Each person in each team will be responsible for explaining that team's information to others; on each team, all four people become equally expert. Then re-divide them into four groups of three, putting one expert from each original group into the second set of groups. After sharing their information, and teaching everyone in their small group about their own expertise, the expert groups may wish to reconvene to review what they learned from the other two groups.



Processing Small Group Work

Before you start the session, think about how you will process the small group work. It will help you decide on the complexity of the task and the amount of time you want to give the groups. Here are some common ways to do it.

- *Flip-Chart Presentations:* Have the groups prepare presentations on a flip chart and tell them they will be presenting their findings to the rest of the group. (This type of report takes the most time.)
- *Gallery Walk:* Have all groups summarize their discussions on newsprint and post them around the room. Give participants time to wander around and read the walls. Then process the findings in a large group, highlighting certain points from each group.
- *Group-to-Group Reports:* If you have several small groups and limited time, you might have each group report to one or two other groups, but not to everyone. You may need two rooms to separate the simultaneous presentations.
- *Partial Reports:* Instead of asking the groups to report on everything they discussed, you can select one or two things that are most critical for making the point clear.
- *Summary:* After posting all the sheets on the wall, the facilitator can point to interesting comments, ask for responses, and call on groups to explain.
- *No Reports:* Instead of having the groups report, you can facilitate a discussion and ask for specific comments and answers as you go. This saves time; the problem is that it can miss some of the original insights generated by the groups.

Playing the Part: Using Role Plays

Role plays can offer participants an opportunity to build confidence, learn new information, practice new skills, or improve ability to work with others. To make role plays effective, it's important to plan them carefully, make participants feel comfortable, and be clear about why you're using role playing instead of another training method.

Good role plays should have specific goals and be relevant, realistic, and interesting. They also should be fairly short (5–10 minutes), open-ended (not scripted), and simple. In addition, they should contain an inherent dilemma or conflict and include clear roles and character descriptions. Try to assign roles that represent different views or create some type of compelling interaction that will help participants learn.

On the next page are some key steps for introducing and facilitating a role play.[4]

As you get started . . .

- *Set the Climate.* Get the participants interested in the role play and what's about to happen. Try to link it to previous sessions; schedule it to occur after

participants have had time to become comfortable with one another.

- ***Share the Purpose.*** Clarify the goals of the role play. Give some insight into what participants might learn. For example, if the role play is demonstrating how to lobby for increased support for EE, you might want to show some of the ways to influence people.
- ***Provide an Overview of the Situation.*** Explain the role play to the group, including descriptions of characters and situations and any important background information.

Giving Roles

- ***Hand out Role Descriptions.*** Pass out copies of the overall scenario and the individual roles. Keep the character descriptions short and simple. (If they're too complex, you'll make it hard on the volunteers.) You might want to have the participants pair up to discuss how they will prepare for the roles.
- ***Ask for Volunteers.*** Solicit volunteers to play each role. Also explain that if people feel uncomfortable during any part of the session, they can say "freeze," and the group can help support them and give them ideas about how to proceed. It's important to make this activity as non-threatening as possible.
- ***Use Observers.*** Give observers a task so they are engaged during the role play and have a common focus. Write the task on the flip chart and link it to the purpose of the role play.
- ***Coach Role Players.*** Help the players with the roles if necessary. Give them time to prepare and feel comfortable. You might want to have them rehearse in another room.

Cameras . . . Action!

- ***Set the Stage.*** When the role players come into the room, explain where they should sit. Introduce them as the characters they're playing. For example, "This is Mr. Kempke, the science supervisor for the district."
- ***Stop the Role Play.*** The role play should not last more than 10 minutes. You might want to aim for five to six minutes of actual role playing time and about 15 minutes of processing, or debriefing. Briefly turn the floor over to the observer before leading a discussion about what just happened.

Wrapping up

- ***Debrief Role Players.*** Ask each person about his or her chosen strategy. ("What was your plan? What were you trying to accomplish? What impact do you think you had on Mr. Kempke?")
- ***"De-Role" Players.*** Thank the participants, using their real names, and have them take their seats. It's important for them to step out of their roles and return to the group.
- ***Generalize, Apply, and Reach Closure.*** Complete these steps of the experiential cycle (see pages 9–10) to ensure that all the participants have time to reflect on what happened and to think about how they can use what they learned in their classrooms. Take time to close the session and link it to the next.

Making the Case: Using Case Studies

Case studies are stories or scenarios that help participants improve their problem-solving skills and increase their understanding of complex issues. In your workshops, you can model using case studies to spark discussion of environmental issues and solutions. You can also use teaching cases to help teachers better understand different aspects of EE in the classroom—for example, a case study might explain how a teacher tried to get support for an EE program in his or her school. *Getting Started: A Guide to Bringing Environmental Education to Your Classroom* has 35 short stories illustrating teachers' different approaches to EE.

The best case studies involve real, relevant, and interesting situations that leave plenty of room for interpretation and debate. Participants get a chance to discuss

workable solutions, listen to different perspectives, and improve their critical thinking skills. Because case studies present an unresolved situation, you might want to use the following types of questions to stimulate discussion in small groups, lead a large discussion, or guide participants as they read.

- What seems to be the underlying issue?
- How would the different characters define the issue?
- What would you do in this situation?
- What questions do you need to ask before you can determine what you would do?
- What are the likely outcomes of these different actions?
- Which outcome would be best for your students?

"The case system, properly conceived, takes the realities of life in the form of concrete experiences and from them draws conclusions of wider applicability."

—Melvin T. Copeland, 1931 [1]

Case studies can either include a solution or withhold it to promote discussion. They are often written, but could also be presented in video format. If the case is long, you might want to assign it as outside reading or use small pieces of it throughout the workshop; if the case is short, you can ask participants to read it during the workshop. Whatever the format, the case should fit participants' experience levels and interests. Before starting the discussion, remember to ask if there are any questions about the case.

There are many ways to use case studies in your workshop. In some training sessions, a complicated case is the focus of a workshop. In other instances, a series of cases may be one part of a workshop. We suggest that you process case studies using small groups (see page 15 for tips on organizing small group activities), so that you can encourage more discussion and interaction among participants. Make sure to post the small group task and give enough time for individuals to read and think about the case study before they move into discussion groups.

Don't forget the generalization and application stages of the workshop model (see pages 9–10)—you want to make sure that participants have time to reflect on the case study discussion and make generalizations that go beyond the case presented. For example, you might ask for any insights they've gained from the particular problem presented, or for preliminary conclusions they've drawn from the discussion. Encourage participants to think about how to apply what they learned from the case study to the rest of the workshop or to their "real" lives as teachers.

Below are some sample case study topics that address general education concerns and specific EE issues. Most of these topics are covered in other units of the *Workshop Resource Manual* with background information, stories, and activity ideas.

- multicultural concerns
- specific environmental problems and solutions
- managing a field trip
- choosing criteria for decision making
- values in the classroom
- cooperative learning
- advocacy vs. education
- group management and discipline
- giving feedback

Take a Hike: Using Field Trips

From touring a water treatment facility to visiting a legislative representative, field trips can add much to your workshop. First-hand observations, discussions, and experiences can make a powerful impact on learners of all ages.

A field trip during a teacher workshop can also model how teachers can use field trips to give students direct experiences. You might take a field trip to a beautiful natural area—a place participants might not otherwise have a chance to see—and conduct some activities. Or, you can discuss the advantages, disadvantages, and "how-to's" of field trips without leaving your workshop site. Another *Workshop Resource Manual* unit, "Using Community Resources," contains handouts and additional guidelines for building teachers' confidence about taking field trips. Briefly, here are some tips for conducting a field trip during your workshop. These are also good discussion points if you will just be talking about field trips with participants.

Have Objectives
Make sure that the trip is appropriate for the workshop and explain these connections to participants. Let people know what to expect on the trip and what to bring to make the excursion most useful. Make sure trip activities meet trip objectives.

Rehearse the Trip
Several days before the workshop, run through the entire trip yourself. Check on bathrooms, phones, parking places, transition areas, route, and other important details.

Conduct Pre-Trip Activities
Have a pre-trip activity to set the stage, familiarize participants with the location, and interest them in the trip. A map may be a helpful orientation tool.

Have a Back-Up Plan
Know what you will do if the weather turns bad, if the bus doesn't arrive, or if other problems come up.

Have Activities for the Trip Itself
Have several definite tasks for participants to accomplish during the trip. Observations can occur here, too. Don't forget transition times—traveling, meals, or waiting for speakers. Try to use all field trip locations to their maximum potential.

Include Post-Trip Activities
Back in the workshop or classroom, have an activity or two that will allow people to reflect on their experiences, compare those experiences to others', and ask questions that didn't get answered during the trip. Use these activities to extend the trip to your on-site objectives.

Potential Discussion Topics for Teachers

- What are some efficient ways to overcome the traditional barriers of bus transportation, chaperones, permission slips, insurance, or entrance fees?
- When during the school year is a good time to take a field trip?
- What role should the teacher play during a trip that has a guide?
- What should a teacher remember to do before the trip?
- What are the pros and cons of taking field trips?
- Why do field trips sometimes flop?
- What have been excellent field trip destinations in the past and why?

Thank Your Assistants
Remember to send thank-you notes to the appropriate people and agencies so you can easily tap their resources next time.

Pictures Worth 1,000 Words: Using Media

Workshop presenters should use a variety of audiovisual aids to enhance the workshop design and address different learning styles. Each type of media has specific advantages that can make your program more effective. A good slide show or film, for example, can bring nebulous environmental concepts to life. Good handouts, overheads, or flip charts can emphasize a point, draw attention, and enable participants to focus on the topic. Your choice of medium will depend on many things—room design, workshop format, topic, amount of time available, time of day, and personal preference. Here are a few ways to think about the choices.

Newsprint/Flip Chart/Chalkboard

These are the most common of educators' tools. Remember to write large enough and with a heavy hand; letters should be 2½ inches high to be read at the back of a room. A pad of newsprint or flip chart paper, however, has several advantages over a chalkboard: Pieces of paper can be saved and hung on the walls as "visuals," and the papers can be prepared before the workshop and saved from one to the next. Don't hesitate to use several colors, but try to keep the amount of text per page to a minimum.

Overhead Projection

For larger audiences, "overheads" work better than chalkboards or flip charts because the image is larger and the speaker faces the group as she or he writes. Writing isn't even necessary during the presentation if transparencies are prepared in advance. Most photoduplication machines can copy images from paper to transparencies; be sure you purchase the correct type of transparency. Again, keep the text to a minimum—only your key points—and use large letters. Also, you may need to practice orienting and focusing the transparency.

Slides

Well-composed slides can add an exciting visual element to a presentation. Make sure slides with written text are concise and readable. Unlike overhead presentations, a slide show requires a room that can be darkened. Don't talk to the screen—let the images enhance your talk. You may not be the best judge about how quickly to change images or how much to discuss each slide, so practice with a helpful audience.

Slide/Tape Show

A good synchronized slide/tape presentation requires a machine that plays a cassette tape and forwards the slides on cue from an inaudible signal. Some slide shows use multiple projectors for a superb effect. The production costs for this type of program are far cheaper than film or video, although it's more expensive, more complicated, and less flexible than a simple slide presentation.

Film

Commercially prepared films tend to be of extremely high quality and are quite informative, but they can quickly become outdated. Showing only a portion of the film may be a good use of limited workshop time. For large crowds, films are superior to videos because the image can be projected onto a large screen.

Videotape

Videotape recordings (videos) are becoming very popular in schools. They are easy to duplicate, distribute, and show. But the image is shown on a television screen, so a large audience might have difficulty watching unless several TVs are cabled to the same VCR. Videos are now easier to produce, given the advent of personal video cameras and the availability of local public access television station equipment for editing. Note that tapes from foreign sources are usually incompatible with U.S. equipment but can be translated for a fee.

Computer Projection

You can demonstrate a computer program or show a room full of teachers the many resources available on the Internet by projecting the image that normally appears on the monitor. This is accomplished by attaching the computer directly to an LCD plate—a thin, liquid-crystal-display device that sits on top of an overhead projector. This setup often takes some fiddling to get the contrast and light right. And, of course, if you are demonstrating online resources, the room must have a phone line and modem.

Facilitation Skills You Can't Live Without

IV

A GOOD TEACHER OR WORKSHOP LEADER needs to be a good facilitator. A facilitator's role is to help individuals communicate with each other in ways that move the group toward specific goals and objectives. A facilitator can help bring out the best in students or participants and help them feel at ease. He or she can also encourage participants to clarify their thinking or feelings about a subject, talk more freely, and build their own understanding from workshop activities.

Four Key Skills

Four key facilitation skills can help you deliver a more effective workshop. Each requires a lot of practice and excellent listening skills. Following is a brief summary.

Ask Questions

Asking the right questions can do more to guide a discussion than any other facilitation skill. The best questions are open-ended—they help participants reflect on activities, elaborate on their thoughts and feelings, and dig deeper into the discussion. Unfortunately, most of us tend to ask questions that have one "right" answer. One way to help yourself ask good questions is to write them out before the workshop starts. This helps you avoid having to improvise at the same time you're trying to facilitate a discussion and keep the workshop on track. Here are some examples of open-ended questions:

- "What are some different ways this activity could be used?"
- "How would you explain EE to a colleague?"
- "How could your students influence a decision important to the community?"

In some cases, you might want to encourage participants to think before they respond: "Think about this for a moment, then raise your hand," or "I'll ask a series of three questions and then we'll talk about all of them." Be sensitive to cultural differences among participants regarding direct eye contact and speaking in large groups—you may need to wait for answers or use small groups more frequently.

"A soft answer turns away wrath." It works every time. The way you answer questions will always be remembered more clearly and for much longer than the content of your answer.

—Dianna Booher, The Confident Communicator

Paraphrase

This is an important facilitation skill for clarifying and ensuring comprehension, highlighting a point, or valuing a comment. Paraphrasing means that you rephrase what someone else says. For example, you might say, "I hear you saying that . . ." or "Did I understand you to say . . ." By paraphrasing, you invite a participant to say, "Yes, that's what I meant," or "No, what I meant to say was . . ."

Exercise on Facilitation Skills

Try this exercise if you are helping a group of educators develop facilitation skills.

Arrange participants in small groups of four or five. Explain that each person will be a facilitator for five minutes, leading a discussion with the others in that group. Each person will also have a turn as a recorder, noting the types of questions and responses the facilitator gave.

Supply the participants with three somewhat controversial questions to discuss. Ask each person to choose one and prepare good questions, comments, and probes that will help keep their discussion going. It may help to choose a topic about which they either know a lot or don't care very much, so the content of the discussion won't distract their attention.

- How can we reduce the waste stream in our area?
- Which energy conservation measures should we promote?
- What is good and bad about our current health care system?

Give them five minutes to think about their practice session, then ask for two volunteers in each group. One will facilitate; the other will record.

When all the groups have finished, ask the recorders to share with their groups the types of questions and comments that helped keep the small group discussions focused and productive. If there is time, facilitate a large group discussion around what the facilitators learned from the experience and how they might continue to practice facilitation skills as they lead workshops.

You can use paraphrasing to help quiet a persistent talker who is "hogging" the floor. For example, you might say: "Dale thinks we need more feedback from the principals. Does anyone else have any thoughts?" Paraphrasing can also help move the discussion along. For example, you might say, "If I could interrupt for a minute—You've made several important points and I'm afraid we're going to lose them."

Although paraphrasing is a key facilitation skill, it's important not to overdo it. Participants don't want to hear what they say parroted back continually.

Summarize

Like paraphrasing, summarizing takes a lot of practice. It allows you to pull important information together, guide a discussion, or make a transition from one session or one point to another. You can also summarize to help check for clarity and review progress. For example, if you feel that the participants are confused during a session, you might say something like "It sounds like the most important things we're coming up with here include . . ."; then list those points and ask, "Am I right? Does anyone have anything to add?"

You can also ask participants to summarize the discussion to get more people involved in helping to clarify what has happened during a session.

Offer Encouragement

There are many techniques you can use to help participants feel at ease and to encourage discussion. Most are just good listening skills that people use naturally; others will take practice. Here are some examples.

Ten Pitfalls of Facilitation

1. Being unprepared or disorganized.
2. Not saying "I don't know " when you ought.
3. Not establishing personal rapport with the group.
4. Apologizing for yourself or your organization.
5. Using poor audiovisual aids.
6. Not sticking to the schedule—especially, failing to end on time.
7. Not involving participants.
8. Using inappropriate humor.
9. Using sexist or racist comments.
10. Not using every workshop as a learning experience.

- From the start, make sure the tone of the workshop is one of acceptance. Communicate to the participants that there are no "bad" questions. Answer every question with sincerity.
- Maintain eye contact with the particpants who are speaking. Let them know you are listening.
- When you understand what a participant is trying to say, nod or give some type of signal that says, "I'm paying attention."
- Use encouraging body language. Lean toward the person talking and pay attention to what he or she says.
- Call people by name. Also, refer to participants by name when you want to emphasize a point they have made. For example, you could say, "Phil's comment about cooperative learning is exactly what we're talking about now."
- When asking open-ended questions or encouraging participants to summarize a discussion, make sure you give them enough time to think. Wait five seconds before calling on anyone.

Other Facilitation Tips

- Don't forget to introduce yourself and establish credibility, but be sensitive to the problem of setting yourself apart by over-emphasizing your expertise. Make sure that the participants get a chance to introduce themselves and establish their own credibility with the group.
- Recognize the expertise of the group members and defer to them when you are able. Learn to say, "I don't know—what do others think?" without apologizing.
- Be flexible. Some things won't happen as planned. Just remember to "go with the flow." Make transitions without a big fuss.
- Try to avoid distracting habits, such as pacing back and forth, talking too fast, or saying "um" or "uh" repeatedly.
- Write on newsprint or the chalkboard only when necessary, because it takes time and can slow the group down. However, it is very helpful to highlight key words or concepts as they come up.
- Dress for the part. Try not to be over-dressed or under-dressed, but always look professional.

The checklist beginning on page 32 has additional suggestions for organizing the workshop and setting a tone that helps make facilitation easier.

Planning for Ongoing Support

SOME ADMINISTRATORS have little faith in short-term workshops and programs because real change often takes much more effort. Teachers may not have more than a Saturday to give to EE, and program developers may not have the money to orchestrate a lengthy course or process. This makes short-term workshops the most feasible option, and some level of ongoing support is absolutely crucial for their success.

Ongoing support may take the form of money, resources, newsletters, e-mail accounts, or collegial support; you may have to think creatively to find a strategy that will work in your area. It is important to consider how you could continue to interact with the participants after the workshop, and these opportunities should be designed into the workshop and budget. This continued interaction may help overcome the constraints teachers feel about implementing EE.

Your needs assessment probably gave you some ideas about how to suggest changes, some of which you built into your workshop. Other constraints, however, may need to be addressed over time and in several settings. The ideas in this section are based on several assumptions:

1. Making a commitment to a colleague provides an incentive to try something new,
2. an important barrier may be a lack of tried-and-true resources, and
3. just knowing that others are in the same boat is very helpful when the seas are rough.

Ways to Build Support for New Ideas

- Register participants in pairs and require that at least two from the same school attend. You can design the workshop so they work together and learn that they can continue to count on each other for support.
- Give partners an assignment to conduct after the workshop. Ask them to try something new, meet with each other a few weeks later to share their results, and send a postcard report to you.
- Have participants pair up for workshop activities. After each activity, have pairs evaluate and report on their efforts. By having them practice giving and receiving feedback from colleagues, you may increase the chances that they continue helping each other once they get back to school.
- Get publicity for the EE programs. If the newspaper prints glorious pictures and explanations of a school's environmental program, it may give a boost of encouragement to the teachers, parents, and administration.

Ways to Provide Ongoing Information and Reminders

- Schedule a follow-up meeting a few months after the workshop and ask participants to report on their experiences to each other.
- Give them an assignment to return to you in several weeks. To avoid feedback that is too weak or delayed to be meaningful, make short, relevant assignments in which teachers react to their practice and consider new ideas.
- Stay in touch with your participants. Send e-mail messages, make phone calls, or arrange to visit their schools.
- Send a postcard or make contact with participants several weeks after the workshop to remind them of their interest and commitment to EE. You might have the teachers write postcards to themselves during the workshop; you could collect these and mail them three months later.
- Consider providing an incentive to gently encourage participants to return information and assignments. Additional materials, a new activity idea, a T-shirt, or a certificate may motivate them.
- Start a newsletter and send it to all workshop participants; encourage them to contribute their ideas, too. You could also maintain contact by sending out a poster or a new resource periodically.
- Teach participants to write proposals and be able to offer funding to carry out their EE activities with students. Resources from state and federal land management agencies are sometimes available for conservation projects or habitat restoration.

VI

Evaluating Your Success

EVALUATION IS A CRITICAL PART of an effective EE training program. It can give you important feedback about what works and what needs improvement. It can also help justify your program to supporters, administrators, and supervisors. You want to be able to say, "These programs work." A good evaluation strategy can help you know. Although there are many types of evaluation, in this section we will use four categories defined by Donald Kirkpatrick.[6]

Reaction: How much did the participants like the program?

Learning: What principles, skills, facts, and techniques did they learn?

Behavior: What changes in participants' teaching behavior resulted from the program?

Results: What were the tangible results of the program in terms of student learning or environmental improvement?

Facilitators and program coordinators may also use a checklist to evaluate a program themselves. The form on page 31 is derived from research evaluating the value of short-term professional development programs.

Reaction

Collecting information about the participants' reactions to the program is an important way to gauge the program's strengths and weaknesses and start the process of making improvements. You can do this several ways.

A

Ask participants for written reactions to three questions at the end of each day:

- "What is going well? What do you like about this program?"
- "What is not so good about the program?"
- "How could things be changed to improve the program?"

The advantage to conducting a quick evaluation is that you will be able to respond to the participants before the program is over. You will be able to address misunderstandings or inappropriate expectations by saying, "I see you want X but your boss wants this workshop to cover Y." You will also be able to make the reasonable changes they request, such as scheduling an extra afternoon break or asking people to speak louder. They will appreciate your responsiveness. More comprehensive comments could help you adjust the agenda to meet participants' needs by meeting with some people separately, changing the small group tasks, or creating alternatives.

B

A pencil and paper evaluation form allows you to ask specific questions and collect consistent data from a large number of participants. The same form can be used in several workshops as a way to compare programs. Typical end-of-workshop reaction questions, such as those in the following sample, use a five-point scale to rate responses:

Sample Written Evaluation Form

Overall, what did you find most useful about the workshop?

What did you find least useful about the workshop? How would you have made changes to better suit your needs?

Please circle the appropriate number *(1 = poor, 5 = excellent)* to rate the workshop facilitator's ability to:

1. hold the interest of the group	1 2 3 4 5
2. present material clearly	1 2 3 4 5
3. make objectives understandable	1 2 3 4 5
4. choose useful exercises	1 2 3 4 5
5. use audiovisual aids	1 2 3 4 5
6. help the group apply content	1 2 3 4 5
7. adequately cover the material	1 2 3 4 5
8. present accurate information	1 2 3 4 5

On the same 1-to-5 scale, please rate the following:

1. suitability of facility	1 2 3 4 5
2. quality of food	1 2 3 4 5
3. effectiveness of workshop publicity	1 2 3 4 5

Close-ended questions are easier to summarize, but they give you limited information. Open-ended questions, where participants write out their responses, take more time but also tell you more about what the participants think is important. A mix of both questions is often ideal.

C

Small group discussions or interviews are good mechanisms for collecting reactions to broader questions. In this evaluation scheme, randomly selected participants spend 30 minutes answering a few questions in a small group. The interaction within the group may lead to a greater sharing of ideas than individualized responses. Some sample questions are:

- "How valuable was this workshop to you, compared to other workshops?"
- "How will your teaching be different as a result of this workshop?"
- "What, if anything, did you gain from the workshop?"
- "What recommendations do you have for improving the workshop?"

Learning

Even if participants react positively to a training program, they may have learned little. If your goal goes beyond entertainment and professional interaction, you will want to know more than what these reaction questions can offer. You will want to know if participants changed or clarified their attitudes, if they gained knowledge, and if they had an adequate chance to practice their skills. Also, did the teachers gain confidence in their abilities to lead EE activities? Is this confidence supported by competence?

The most typical strategy is to use either a pre-test or a control group to document the incoming level of knowledge and attitudes, following with a similar instrument after the workshop to measure the difference. These surveys most often use quantifiable, close-ended questions that can be analyzed statistically. Other mechanisms for evaluating learning include making performance evaluations, hosting focus groups, and conducting interviews. The box on the next page illustrates sample learning questions.

Sample Pre-Test/Post-Test Questions for a Teacher Workshop [7]

Please circle how knowledgeable you are about the following for teaching EE *(1 = not at all, 5 = a great deal):*

a. Conducting class outdoors	1 2 3 4 5
b. Using high-tech equipment or computers	1 2 3 4 5
c. Using information about environmental careers	1 2 3 4 5

Please circle how often you plan to use the following to teach EE *(1 = not at all, 5 = a great deal):*

a. Demonstrations	1 2 3 4 5
b. Mentors or role models	1 2 3 4 5
c. Visual aids (maps, posters, charts)	1 2 3 4 5

Behavior

Awareness, knowledge, and skills are only a few of the prerequisites for changing behavior in the classroom. Factors such as administrative support, peer support, available resources, confidence, and available rewards also affect the degree to which teachers can begin to teach differently. You can influence the likelihood of change by designing a program with administrators, building peer support groups, asking teachers to commit to try new teaching strategies, and providing resources and reward systems (see page 26, "Planning for Ongoing Support"). Effective programs usually employ these strategies. You can measure the degree of behavioral change by directly observing participants after the workshop or by asking them to observe and measure their own behavior with specific questions such as the following.

- "Now that you have been back in the classroom for several weeks, have you been able to try any of the strategies and activities you practiced in the workshop? If yes, which ones and what were the results; if no, why not?"

- "Since the workshop, have you had opportunities to incorporate environmental content into your teaching? How often have these opportunities occurred, and how have you taken advantage of them?"

- "How confident do you feel in your abilities to conduct an environmental activity or help students investigate an issue? What might increase your confidence level?"

- "To what extent are you interested in participating in future EE training programs (none, a little, a fair amount, a great deal)? Which topics are you particularly interested in?

Results

Do the new knowledge, attitudes, skills, and behaviors have any effect on the classroom or the students? Measuring the results of a workshop is difficult because it is hard to presume the workshop was responsible for specific changes. Nevertheless, you may want to know about changes in the educational process, in the knowledge and skills students have acquired, or in the local environment.

One of the most useful strategies for measuring results is an interview or questionnaire distributed three to six months after the training program. Scheduling interviews with a select number of participants will help you avoid the problem of selected questionnaire returns (where only those who feel strongly respond). You can ask a few questions on the phone or in person and often learn about something you didn't even think to ask. You might also talk to the school administration to see if there is an increased interest in environmental questions and activities in the school. Another form of evaluation is the documentation of changes in the environment where projects were done (e.g., energy saved, water quality improved, trees planted, incandescent light bulbs replaced, or letters written).

Given the great variation in the personalities of teachers and students, and in their different styles of teaching and learning, it is difficult to use student assessment as a measure of workshop success. It is often considered more professional and more empowering to teachers to ask them to consider ways to evaluate changes in their teaching practice and to give them responsibility for measuring the value of the workshop, rather than to engage their students in the evaluation process.

A Self-Evaluation

Sometimes it is helpful to have your own checklist to review as you prepare for a workshop or reflect on the one you just finished. The following list of questions and categories may help prompt your thoughts. Feel free to adapt it to meet your own style. You might want to adapt these questions for the participant evaluation.

Short-Term Professional Development Checklist [8]

This checklist is designed to assess a short-term training course or workshop. For each criterion, circle the number that reflects your workshop plan or experience.
(1 = very little, 5 = very much).

Responds to an identified need or priority.	1 2 3 4 5
Has a planning component that:	
– defines clear expectations	1 2 3 4 5
– encourages collaboration	1 2 3 4 5
– considers participants' needs and beliefs	1 2 3 4 5
– has a clearly defined agenda or timeline	1 2 3 4 5
Has high-quality training sessions that:	
– treat participants as professionals	1 2 3 4 5
– encourage the exchange of ideas	1 2 3 4 5
– allow for flexibility	1 2 3 4 5
– allow for creativity	1 2 3 4 5
– have a demonstrated effect on teaching and learning	1 2 3 4 5
Has a follow-up component that:	
– is planned	1 2 3 4 5
– provides for realistic implementation	1 2 3 4 5
– is supportive of application and practice	1 2 3 4 5
– allows for institutional reinforcement	1 2 3 4 5
Has an evaluation component that:	
– provides for review of presenters by participants	1 2 3 4 5
– examines impact on learning	1 2 3 4 5
– reflects program purpose	1 2 3 4 5

Reports and Records

It is often helpful to keep a record of what you did at each workshop. You may find yourself going back to those notes more often than you think! Specifically, you may need a record of your workshop for a program evaluation or grant report. The following outline describes a reporting system that trainers in the National Park Service[9] have found useful. It lists the components of the standard workshop report.

- All pertinent administrative documents, including copies of the needs assessment form, announcement, agenda, objectives, roster, demographic make-up of the group, correspondence with coordinators and guest speakers, assignments, mailings, and handouts.

- Summary narrative of the interviews, planning, development, and implementation of the program. This should include problems, unexpected developments, key supporting agencies or individuals, and a summary of the needs assessment results.

- Evaluation of the workshop, including participant evaluations and comments, instructors' reactions to the agenda and individual sessions, success of each activity, budget analysis, and an overall review of how well the program met its goals.

- Overall recommendations on the agenda, activities, instructors, media, logistics, field trip site, food, facilities, and general information that would be helpful to subsequent workshop trainers.

VII

Checklist for Pulling Off the "Perfect Workshop"

A WORKSHOP LEADER must be prepared. Designing and implementing a workshop takes a lot of thinking and a lot of work. There are a million things to plan and decide. To remember some of those details, you can use the workshop planning checklist below. Feel free to adapt it to suit your needs. Good luck!

Making Initial Plans

- ☐ Discuss the workshop with administrators, colleagues, collaborators, funding organizations, and others who should be involved from the start (see page 3 for more about building institutional support).
- ☐ Determine how the workshop will be funded. Will participants pay? Will you have an outside sponsor? Will it be part of an ongoing teacher training program sponsored by your school or organization?
- ☐ Identify your audience and conduct a needs assessment (see page 4).

Starting Work on the Program

- ☐ Prepare workshop goals, incorporating results of the needs assessment (see page 11).
- ☐ Choose a date, time, place, and timeframe will last. Can inservice or release time be arranged during the workday?
- ☐ Decide if you need a co-facilitator. If so, make arrangements with your colleague as soon as possible. Plan the agenda and workshop sessions, including objectives for each session. Make sure to include a variety of activities and techniques that will hold the interest of your group and that will work with a variety of learning styles (see page 14–22).
- ☐ If you will be inviting special guests, make arrangements as soon as possible. Listen carefully to what potential guests say they can contribute. Then discuss the needs of your audience in detail so guests can plan appropriate presentations or activities. Put specific instructions in writing. Agree on the type of compensation your guests will receive (honorarium, mileage reimbursement, expenses, free meals, etc.). Make sure your guests know where the workshop will take place and what time you expect them. And have a backup plan in case they don't arrive on time.
- ☐ Determine what materials you will be distributing during the workshop—and who will gather, duplicate, and develop them.

Working Out Logistics

- ☐ Reserve a room or area that is appropriate. It should have enough floor and wall space, electrical outlets, display tables, ventilation, comfortable chairs, and so on. It should also provide access to the outdoors. Arrange to have the room set up in the way that best suits your needs (see page 9).

- ☐ Determine what incentives, if any, you will offer to encourage teachers and other participants to come to the workshop—these may include continuing education credits, free or low-cost materials, or certificates. Consider handing out prizes such as snacks or posters for folks who arrive on time.

- ☐ Decide how you will publicize the workshop (announcements, flyers, word-of-mouth).

- ☐ Determine how you will evaluate the workshop. What type of evaluation forms do you need? What type of follow-up efforts will you be asking of the participants? (See pages 27–31).

- ☐ Decide what kinds of food and drinks, if any, you will provide. Have them delivered to a separate room at least 30 minutes before you need them. Will you charge participants additional money? Where will they eat?

- ☐ Order workshop supplies, such as pencils, activity resources, notebooks, hand lenses, and curriculum packets at least two months before the workshop.

- ☐ Determine which audio-visual equipment (flip charts, VCR, slide carousel, overheads, extension cords) you will need, and make sure to order or reserve them well in advance of the workshop. Make any field trip arrangements as soon as possible. Check on costs, discounts, group limits, special clothing, transportation, and so on. Let participants know in advance if they will be taking a field trip and what they should bring and wear. Pack a first-aid kit and plan an alternate event in case of bad weather or unforeseen complications.

- ☐ Send introductory materials to your participants so they know what to expect—a map of the site, travel directions, parking information or tokens, phone number at the site, program agenda, and items they should bring, such as curricular materials, food, extra money, special clothing, or certain equipment. Plan to get plenty of sleep the night before.

Last-Minute Reminders

- ☐ Set up early so you can relax and talk to your participants as they arrive. Display charts, crafts, posters, props, and other materials. Unlock the doors.

- ☐ Put signs along the route and in the building so teachers can find your workshop.

- ☐ See that food and drinks are ready to go. Set out name tags with narrow-tip markers, and wear one yourself. Make sure the room is arranged suitably.

- ☐ Make sure goals and objectives are written on flip charts or overheads before you start. Also, write small group tasks on flip charts, along with the amount of time the group has to complete them.

- ☐ If you will be using newsprint, tear off masking tape in advance and stick the pieces along the easel for easy access.

- ☐ Write down the questions you want to make sure to ask the participants. You can also write reminders to yourself on a prepared flip chart using a pencil—that way, you'll be the only one who can see them.

- ☐ Before participants arrive, make sure that all equipment works, videos are cued up, and overheads and flip charts are in correct order. Check for extra projector bulbs. Position the projector stand in the best spot for the audience and for you.

- ☐ Make sure all the handouts are ready to go, including the evaluations. Organize them so you know where everything is. Bring extra markers, pencils, erasers, tape, and other office equipment. Fill a glass of water and remember to drink it, for your voice's sake!

During the Workshop

- ☐ Greet participants warmly when they arrive, making them feel welcome. Point to name tags and handouts as you mingle with them and encourage them to circulate.

- ☐ Start on time. After your welcome and ice-breaker, give an overview of the entire workshop, including the agenda and goals. Highlight breaks, meals, restroom locations, and other special "housekeeping" items. Don't forget to introduce yourself and allow participants to do the same.

- ☐ Stay on schedule, give breaks as indicated, and never run over at the end of the workshop.

- ☐ Don't forget to leave time in each session for asking your generalization and application questions and for closure (see pages 9 and 10).

- ☐ If you are conducting a written evaluation, leave enough time for participants to think about their answers as well as to fill out their forms. Try to collect all forms before participants leave.

- ☐ Pass out a sign-up sheet early in the workshop to record participants' names, addresses, and phone numbers; if possible, make copies of the list and distribute them before the group leaves. Alternatively, if you have a list, pre-registered participants can check off their names and make corrections, and late registrants can add their names to it.

- ☐ If you are co-facilitating the workshop or working as part of a team, meet at the end of each day to review what worked well, what didn't, and what needs to be revised for the next day. Always keep after-workshop meetings brief, upbeat, and focused.

- ☐ Know how you plan to follow up with participants before they leave the final session. Make sure to leave time to remind them of any post-workshop assignments. Be clear about what you expect them to complete, how to return it to you, and by when. Remember to thank co-sponsors and participants for their time.

- ☐ Give yourself time to clean up the room when you are finished, but not before you've had a chance to answer questions and see your guests to the door.

Enjoy yourself!

Resources

VIII

Books

Becoming a Secondary School Science Teacher, fourth edition. Leslie Trowbridge and Rodger Bybee. 1986. Columbus: Merrill. A very readable introduction to secondary science teaching, including how to develop lesson plans, answer questions, evaluate learning, etc.

Circle of Learning: Cooperation in the Classroom. David W. Johnson, Roger T. Johnson, Edythe Johnson Holubec, and Patricia Roy. 1984. Washington D.C.: ASCD. Written for teachers; a slim manual that gives suggestions for establishing a program around cooperative learning based on research findings.

Cognitive Psychology in the Seminar Room. Helen Abadzi. 1990. Washington D.C.: The World Bank; An EDI Seminar Paper No. 41. A very practical and readable guide for adult educators covering brain functions, memory, and thought with applications for the seminar room. Answers the question: How can a trainer organize a seminar to increase the chances that participants will retain the material presented and use it in their work?

Developing Effective Classroom Groups: A Practical Guide for Teachers. Gene Stanford. 1977. New York: Hart Publishing. A classic resource for working with small groups in a training setting or in the classroom.

Environmental Education in the Schools: Creating a Program That Works! Judy A. Braus and David Wood. 1993. Washington D.C.: Peace Corps Information Collection and Exchange. An excellent resource that describes a process for developing an effective EE program in schools. Includes over 50 EE activities that could be used in teacher workshops. Reprinted and available through the North American Association for Environmental Education. P.O. Box 400, Troy, OH; 513-676-2514.

Environmental Education Teacher Resource Handbook: A Practical Guide for Teaching K–12 Environmental Education. Richard J. Wilke, ed. 1993. Millwood, NY: Kraus International. A detailed resource book for districts and administrators with information on curriculum development, funding, assessment, children's tradebooks, and state mandates in EE.

Environmental Interpretation. Sam H. Ham. 1992. Golden, CO: North American Press. An excellent guide to adult training, with information on audiovisual materials, theme-building, learning styles, and more. Written for nonformal educators.

Helping Others Learn: Designing Programs for Adults. Patricia A. McLagan. 1978. Reading, MA: Addison-Wesley. Approaches training from the standpoint of the learner and focuses on motivation, information processing, learning, application and transfer.

Nonformal Education Manual. Helen Fox. 1989. Washington D.C.: Peace Corps Information Collection and Exchange. A good reference on adult learning, especially designed for out-of-the-classroom opportunities.

Project Learning Tree Facilitator Handbook—California. Leslie Comnes and Kay Antunez. 1992. PLT and California Department of Forestry and Fire Protection. An informative summary of tips for organizing and implementing a PLT workshop.

Training and Development Handbook: A Guide to Human Resource Development, third edition. Robert L. Craig, ed. 1987. New York: McGraw-Hill. Sponsored by the American Society for Training and Development. Articles about training, program design, media and methods, training applications, and resources. More applicable to business than education.

The Winning Trainer, second edition. Julius Eitington, ed. 1987. Houston: Gulf Publishing Company. Readable, informative, and extensive treatment of adult training procedures. Written for professional training programs, particularly those in business, but fairly useful to educators.

Workshop Resource Manual, part of the EE Toolbox produced by the National Consortium for Environmental Education and Training (NCEET). 1994. Ann Arbor: University of Michigan School of Natural Resources and Environment. A set of resources for teacher inservice providers in environmental education, with background information and workshop activity suggestions on subjects such as "Integrating Environmental Education into the School Curriculum," "Computer-Aided Environmental Education," "Urban Environmental Education," "Multicultural Environmental Education," "Using Community Resources, and "Approaching Environmental Issues."

Articles

"Basic Training." Ann Bradley. 1993. *Education Week*. March 21. Uses a case study of Vermont teachers to show that, by making teacher education a critical component of change and encouraging master teachers to train other teachers, great strides are being taken in educational reform and curriculum change.

"Case Studies: A New Approach." Matthew J. Hennecke, *Training and Development Journal*. March 1983, pp. 70–71. How to overcome the problem of the remoteness of a case by individualizing it.

"How Helpful Are Case Studies?" Colin Amistead. *Training and Development Journal*. February 1984, pp. 75–55. Covers types of case studies, criteria of a good case, learning objectives and how to write cases.

"Role Playing." John E. Jones and William J. Pfeiffer. *1979 Annual Handbook for Group Facilitators*, pp. 182–193. University Associates, Inc; San Diego.Covers information about how to design and conduct role plays, when to use them, and how they fit in the experiential learning cycle.

ENDNOTES

1. Another resource to help you know who the key players are in your state is the *National Survey of EE Teacher Inservice Education*, prepared by and available from the National Consortium for Environmental Education and Training at cost. Call 313-998-6726 or write NCEET, School of Natural Resources and Environment, University of Michigan, Ann Arbor MI 48109-1115.
2. "Questions for Assessing Your Support Base" was contributed by Randall Champeau, Director of the Wisconsin Center for Environmental Education, University of Wisconsin-Stevens Point.
3. The Seven-Step Workshop Design and the Experiential Learning Model are adapted from the Training Resources Group, Inc., 909 N. Washington Street, Suite 305, Alexandria VA 22314.
4. The Role Play Guidelines are adapted from the Training Resources Group, Inc., 909 N. Washington Street, Suite 305, Alexandria VA 22314.
5. Copeland, Melvin T. "The Development of Principles by the Use of Cases," in *The Case Method of Instruction* (Cecil Fraser, ed.). 1931. New York: McGraw-Hill. In the late 1800s, professors at Harvard Law School experimented with using court cases in their classrooms to teach nuances of law. The idea was quickly picked up by Harvard's business school and developed as the case study method of teaching. Professional schools around the world now rely on this method for teaching the skills of their trades.
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